

on his right lower quadrant. One does not learn by listening to words. Our strongest impressions are created by actual observations. What really counts is the practical and tragic experience of seeing these patients on the edge of the grave.

DISCUSSION

Dr. William W. Herrick: Dr. Krech deserves a great deal of credit for the completion and for the clear and convincing presentation of a very important task. Faced with the fact that the mortality from acute appendicitis in our more representative hospitals is 7 per cent, we must realize that the mortality in the community at large is probably higher. In appendicitis we have a disease which, with ordinary diagnostic and surgical skill is presumably remediable, and yet appendicitis has a mortality quite as high as that of enteric fever, a disease for which we have no remedy. This state of affairs, indeed, deserves a searching of method on the part of those who teach medicine, of those who practice medicine and of those who are practiced upon.

I am sure that as a student and as an intern, I had no adequate instruction in the dangers of abdominal pain or in the care essential in its management. Teachers of medicine are but human. We tend often unconsciously to suppress our errors of diagnosis and of operative judgment and technic, when those errors should be exploited for the benefit of the student. In every senior medical course and in every hospital particular emphasis should be laid upon mistakes in diagnosis and upon their clinical and the pathological aftermath.

Another factor in the mortality of appendicitis is the common practice of making too few house calls. It was the practice of an earlier day to see the patient with any acute condition daily, or perhaps twice a day. Now with the economic pressure, the patient does not crave the medical attention that he used to, neither does the physician wish to force upon the hard-pressed patient services which he thinks may not be necessary. The physician is inclined

to leave some of the responsibility on the patient, to say: "If you are not all right tomorrow, let me know and I will come again." In the question of an acute abdominal disorder, such an attitude may mean disaster. A way to avoid this is to enforce early hospitalization of cases of the acute abdomen which cannot be provided with adequate facilities for care at home, a care which may include hourly observation, with appropriate laboratory procedures.

Another source of danger is in our own processes of reasoning. These brave many possibilities of error. The method of logic which we so often must apply in diagnosis, *per exclusionem in ordine*, is so beset by error that frequently the single mind endeavoring to make a diagnosis goes astray. I believe it was Sydenham who said that there are times when one's faculties are holden from him; that is, when the fine coordination of brain and sense and hand is not operative at an efficient pitch and when through fatigue or what you will, mistakes of observation and of interpretation and of judgment creep in.

In diagnosis of abdominal pains such a situation can be shunned by the consultation. The surgeon and the medical man should share the responsibility for the diagnosis of the acute abdomen.

On the side of the laity, I think there has been an increasing, shall I say, disrespect for appendicitis. The average citizen considers it a fairly simple, straightforward matter, one that can be remedied by almost any surgeon. He is a little lax in sending for his physician and in the use of cathartics. Some attempt to re-educate the laity along these lines seems desirable.

Again the public should recognize one point of utmost importance, namely, that an appendectomy, while it may be a very simple operation, can be one of the most complex and difficult procedures, demanding all the skill and resource of the surgeon. Appendectomy should be entrusted only to surgeons thoroughly competent. A rule enforced by some appropriate organization should provide that major surgery of this type be done only by those thoroughly

qualified by training and experience. I would like to sum up the medical point of view by saying that there should be more adequate instruction in the subject of abdominal pain, and in the results of mistakes in its diagnosis and treatment. More frequent visits should be made in the home when the acute abdomen is under consideration. Each case of abdominal pain should have the benefit of both the medical and the surgical consultation. Early hospitalization of cases of this kind should be enforced, the laity instructed in the dangers of acute appendicitis and in the necessity of placing its management in the most competent of surgical hands.

Dr. John A. Hartwell: Mr. President, Dr. Krech, Dr. Parran, Fellow Guests of the Academy: I am afraid that I shall speak more as one who is retired from the practice of surgery than from an active surgeon's viewpoint. First I wish to comment upon the fact that the Academy possibly felt a little too chastened over a recent experience that was connected with a similar study to this called the study on maternal mortality. There were certain events connected with that which left an undying impression upon the minds of those of us who took part in it.

I rather regret that we did not advise Dr. Krech to entitle his paper, "The Problem of Acute Appendicitis in New York City—An Outgrowth of the Study on Maternal Mortality. A Challenge by the Obstetricians to the Physicians and the Surgeons," and then I think we would have had this hall filled; particularly if we had released this paper to the press, and it had appeared on the front page of all the papers this morning as: "One out of every fourteen cases of acute appendicitis dies. What are the surgeons going to do about it?"—or something of that sort.

We were severely criticized for the maternal mortality report because it did get out. It was not intentionally that this was done, but a good many of us felt that it had been a good thing because it did attract attention, and also it aroused the obstetrical portion of the profession to the fact that something should be done about it.

It is incumbent upon the Academy to see that this work yields results, for when 1,100 persons die in this city of appendicitis every year, it is a matter of major importance and becomes pretty nearly a public health problem. And when we find, as we do that the death rate is constantly rising from it in spite of the fact that patients have come earlier in 1931 than they did in 1921, it shows we are not going to conquer the problem entirely by getting all the people to come to the surgeons earlier. There is another element in it. And when we realize that when one is past the age of fifty, though it is rare that he has appendicitis, his chances of living are only about three in four, it is a very serious problem.

Too, Dr. Herrick pointed out, it should be remembered that these statistics are taken from fourteen of the Grade A hospitals and probably represent the highest type of treatment.

We don't know what the minimum death rate of acute appendicitis ought to be, but we do know that 7 per cent is too high, just as we know that the maternal mortality rate was too high, and since that report was published, definite steps have been taken to see that an improvement has been made in which the Department of Health is taking a part by having appointed an Advisory Obstetrical Council, which council is now engaged in studying the recommendations contained in the Academy report and endeavoring to put them into practice.

Another factor that Dr. Krech brought out is that the records, even in our best hospitals, are not as good as they should be. We do not like to emphasize that because these hospitals were very courteous and co-operative in giving every opportunity to Dr. Krech to study their records, but at the same time they like to know where they may profit and it is our experience that the hospitals eagerly accept any knowledge that will be of benefit.

It was very apparent that the uncomplicated pathological process ran parallel in each instance to the earliness

with which the patient came to the operating room. Early, the disease is a comparatively simple problem in the majority of instances, but even here there is enough trouble to cause a very considerable death rate.

The total number of cases was about 4,500 in the two years, a little over 2,000 in each year. That is a goodly number to make a careful study of.

What can we do about it? How can we proceed? We obviously can't proceed unless we can arouse interest. In the case of maternal mortality, we have to acknowledge, frankly, the profession was driven by the laity. The report came out and it was largely instigated by lay organizations and the profession was aroused only when the situation was emphatically called to their attention.

If an undesirable condition exists in appendicitis, it probably exists in a great many other surgical conditions. If we are satisfied with any bad condition that exists, we don't get any further. There are apparently many unnecessary deaths from appendicitis and it is certainly the duty of the profession to see that those unnecessary deaths do not occur.

Dr. Krech has made one specific suggestion as to how we should proceed; namely, that we ask all the hospitals to co-operate in an intensive study of the condition of appendicitis, keep their records fully and have those records analyzed by an impartial and carefully selected committee and reported upon to see exactly where there are factors that have been responsible for death that might be eliminated.

There are, somewhere along the line, elements that we may get rid of if we know all the facts and everybody's mind is intent upon it, and when there are 1,100 persons each year dying in this city of this disease and when the mortality in the acute condition rises as high as 7 per cent, we certainly should take steps to see that improvement occurs.

How shall we proceed to do this? Well, I suggest, Mr. President, that since the Academy has introduced the subject—and it really has been an outgrowth of the report on

maternal mortality—that the Academy take upon itself the responsibility through one of its committees to launch a study of this disease and possibly other surgical conditions along the same intensive lines that the study of maternal mortality took and learn wherein we can improve the situation. It is not worth while to do the hard work that Dr. Krech has done over two years, possibly longer, with the co-operation of fourteen hospitals and then have the paper simply filed away and forgotten. Such a work is only justified if it lead to some effort to improve the conditions that it describes, and I trust that the Academy will seriously recognize its responsibility and lead towards setting up a procedure such as Dr. Krech describes in the paper for making the intensive study that is necessary to be made.

For example, why did some 30 to 40 per cent of these patients get to the operating room only on the third and fourth day? Was it because they didn't inform anybody that they were ill? Was it because of the difficulties, the inherent difficulties of diagnosis, which is perfectly possible? Was it because someone in the line was careless, didn't take trouble enough to find out the situation? What were the factors that led to delay?

Again, what were the factors that caused the deaths in the cases where there was a local abscess, a condition that, as Dr. Krech pointed out, ordinarily is fairly easily dealt with, but in some instances may tax the best surgeon's ability? A complete analysis of that sort should lead to an improvement in the situation, and unless we accept that responsibility, I do not feel that we have done our full duty.

I wish to thank Dr. Krech in the name of the Academy for having undertaken this work and pushed it forward to this extent and made the suggestion that we go on with it.

Dr. Thomas Parran, Jr. (Albany): Mr. President, Dr. Krech, Fellow Members of the Academy: In the very cryptic statement of Dr. Krech as to the reasons why he undertook this study, I think very few of us have appreciated the enormous work involved. When we consider the task which he undertook some three years ago of analyzing the raw

data from these fourteen hospitals, of classifying and transcribing and interpreting these data, it is very difficult to appreciate the extent of the contribution he has made.

Many of us are familiar with statistical studies carried out by organizations of one sort or another, but it is quite rare, I think, to find a physician in practice, a surgeon, who has the time, the inclination, the ability and the energy to lift his eyes from the scalpel to the community problem with which he is dealing, and attempt to answer some questions in relation to it. This Dr. Krech has done with appendicitis in this city.

I think none of us should mistake the fact that this is a real problem, that appendicitis in its influence upon the health of the community is a very significant factor.

Reference has been made already to the discussions, the acrimonious discussions, I might even say, concerning maternal mortality in this city, and yet what are the relative losses as between deaths from puerperal causes and appendicitis? Last year in New York City, there were 665 deaths from all puerperal causes and 1,149 from appendicitis.

Let's compare a few more causes of death. Measles in the same year, 213; whooping cough, 129; scarlet fever, 59; diphtheria, 86; typhoid fever, 70; while appendicitis accounted for 1,150 deaths in this city. More than that, the great bulk of these deaths occurred in the younger and, therefore, the most productive age group, which lends even greater significance to the deaths from this cause. Seventy per cent of the deaths occurred under forty years of age.

Dr. Krech, it seems to me, was very modest in saying that his was not a scientific paper. Perhaps it was not in the sense that a surgeon considers a paper to be scientific, but actually it is a very scientific contribution. It is the first broad-scale study of the appendicitis problem in this city and as such, I think is a distinct scientific contribution, and one to which I hope the widest publicity will be given. I hope the facts which have been ascertained will be disseminated widely among the public and among the profession.

The truth of the matter is that we are making no progress whatever in regard to this appendicitis problem. We are familiar with progress which has been made in reference to many other diseases and conditions, and yet in regard to this very important disease, we are making no progress whatever. We are faced with a constantly increasing death rate.

Dr. Krech was very soft in some of his criticisms, it seems to me. He referred rather casually to the value of vital statistics data. Well, when he discussed more in detail the value of the hospital data, I think he proved that neither one of them is very good. The value of any vital statistics records or hospital records does not go beyond the accuracy with which the original entries are made. Many physicians, I know, place very little value on the data gotten out by health departments, but remember that the lack of value is due to the lack of accuracy of physicians in recording definitely the cause of death. As we look over these data, we would assume that nobody outside of the ward room dies of syphilis. We would assume that nobody except the charity patient ever died of alcoholism, simply because doctors hesitate to put down for their private patients these two and other causes of death.

When we come to study the hospital records in these 14 hospitals, time after time, Dr. Krech shows the data are lacking for 60 or 70 per cent of the cases. In other words, a large proportion of the records mean nothing. He has been very charitable in not pointing out which of those hospitals are the greatest offenders. I think a very significant service can be rendered to the staffs of those hospitals, a service which I hope they will ask Dr. Krech to render to them, by pointing out how they stand in reference to the other hospitals concerned. I hope some representatives of the surgical staffs of the hospitals are here tonight and that you will not lose this opportunity to find out from Dr. Krech wherein your records are lacking in comparison with these other institutions.

One of the discussors has said that this is a public health problem. Quite true, and yet I am very much gratified that

a recommendation is not made primarily for some action by a health department. It seems to me that in this instance there is an opportunity for the hospitals concerned, the surgeons concerned, under the aegis of such an organization as this to make a thoroughgoing study, using uniform records to ascertain some of the unknown factors in this situation.

We do not know why it is that the male is 50 per cent more susceptible to appendicitis than the female, a very important question, it seems to me, to which we should find an answer. We do not know why the number of cases and the number of deaths in September double those in December and January. What are the factors which contribute to this selective sex incidence and the selective seasonal incidence of appendicitis? Broad epidemiological studies are obviously needed on those two facts which may throw some light on prevention.

I think that all of us recognize if appendicitis is recognized early, promptly operated upon, the mortality is about one-seventh, as shown by these figures, of the average mortality. Here there were 1,149 deaths last year in this city. Certainly that should be reduced to 100 or 200, if the proper effort is brought to bear upon it.

It seems to me that here is another great opportunity for service on the part of this organization to study thoroughly this problem. A splendid start has been made. Much more data are needed and can be assembled, the results of which, I am sure, will mean lives saved, deaths reduced from this cause in this city.

Dr. J. A. McCreery: I have been rather on the side lines, perhaps, in this study of Dr. Krech's. I have gone over with him his books of records from the different hospitals, his master charts, and have discussed with him at considerable length his findings and thoughts on his report. I don't think that the Society quite realizes the amount of time, the amount of careful thought that has been put into this study.

There is one point which Dr. Herrick brought out which I think needs emphasis and that is the question of the

instruction of the undergraduate and perhaps to a somewhat lesser extent of the intern in the subject of the acute abdomen and of the acute appendix. Dr. Krech has shown tonight that the acute appendix is one of the major causes of death in the City of New York in the course of a year, and yet as we look over the courses of study in the Grade A medical schools, we are forced to realize that through the increased demands for time on the part of all departments, the amount of time that can be given to the basic subjects—which perhaps those of us who are in general practice feel are of more importance—is being cut down. In one school the amount of time which has been devoted to the subject of appendicitis has been cut down 80 per cent in the last few years.

I know it is hard to squeeze a few more hours into the curriculum, but I do feel that if in the future it will be possible to give more time to these acute conditions, the end results as shown in mortality and morbidity figures, will be very much improved.

Dr. C. W. Crampton: Mr. President, I have been very much instructed by the speakers this evening and there have been many points which seemed to me of considerable importance, one of which is the point mentioned by Dr. Hartwell. But there is an apathy in the medical profession with reference to this point of appendicitis. I think twenty years ago the subject was brought out to a far greater audience and twenty years ago a great deal of the discussion was of an acrimonious nature by medical men against the surgeon, and they were answered in kind. I recall, I think many of you will recall, many such sessions.

I should like very much to hear if any of the speakers can add to our knowledge of the etiology of this disease. It is perhaps acknowledged to be an infection. I am very much interested in the bacteriology of this disease, in its immunology. Very little has been written, but some things have definitely been written in the last fifteen years on that subject. I should like to know if there is any evaluation of these points.

I should like very much to know, for I am one of the least of those who is sometimes called on in preventive medicine to give advice, how to avoid disease, how the public may be instructed to avoid such things as appendicitis. I should like very much to know more of the preventive side of this whole matter and if there is not time tonight, if this is to be referred by the Academy to its appropriate committee for energetic and vigorous pursuit, I suggest a very strong effort be made to develop a preventive side of this subject, its bacteriology, its immunology, as a very positive element in the handling of the whole thing from the standpoint of organized medicine.

Dr. G. W. Kosmak: Well, Mr. President and Members, I have been very much interested in what Dr. Krech has said and also in the general tenor of his paper, because he has taken a precaution to avoid some of the pitfalls of the other committee.

I noticed that he was very careful not to stress one factor in his investigation which gave the other committee a great deal of trouble and which created a good deal of disturbance, namely, that of preventability. I trust that when a new committee takes up its study, they will have the courage to investigate this particular phase of the situation. Although that feature created more or less dissension on the part of doctors in our maternal mortality study, I think it was the one thing which has directed as much attention to the need for reform as anything else.

I do not know whether I would have the courage to assert here what Dr. Krech failed to assert, or at least I didn't get it, that in these deaths there must have been a certain number that could have been prevented not by earlier attention perhaps, but what might be called proper attention. These, I know, are debatable points, but unless we have the courage to attack them and to bring them to the front, we will not get far with our remedies.

That is a thought which I had in mind as Dr. Krech spoke, and I trust that it will not be forgotten by the new

committee which is to investigate further this particular subject.

Dr. Edwin G. Ramsdell (White Plains) : Mr. Chairman, before referring to the analysis of my own series of cases of acute appendicitis, I cannot refrain from a word of appreciation of the tremendous amount of work done by Dr. Krech in studying the enormous material from 14 different New York hospitals.

He has impartially, and with meticulous care, gone over the records of these cases in order to give us these interesting figures.

The object of my presentation is to contrast this study of Dr. Krech's with an analysis of 530 cases of acute appendicitis operated by one man, with a more or less uniform technic, in a community in which conditions can be more easily controlled than in New York City.

These cases were operated at the White Plains Hospital which serves a population group of 50,000 people and a group of doctors to whom the importance of early diagnosis and early operation has been repeatedly emphasized.

In conclusion I would like to refer to the total number of cases of acute appendicitis operated at the White Plains Hospital during the period covered by this study. There have been operated by other members of the Staff 775 cases with 28 deaths, or a mortality of 3.6 per cent. Including my own group of 530 cases the total number is 1305 cases, with 41 deaths, or a mortality of 3.1 per cent.

There are three distinct impressions which have been left with me as a result of this experience.

First, the findings at operation so often show a more extensive pathology than was indicated by the clinical symptoms.

Second, the outstanding factor in the appendicitis problem is early diagnosis and early operation.

Third, all credit should be given to the medical men of the community, the family doctors, who see these cases at the onset and get them to the hospital in time for early operation.